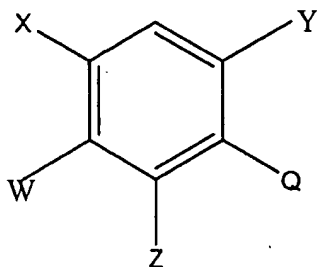


CLMPTO

10/797,936

LISTING OF CLAIMS:

1. (currently amended): A compound represented by the formula I or its salts



I

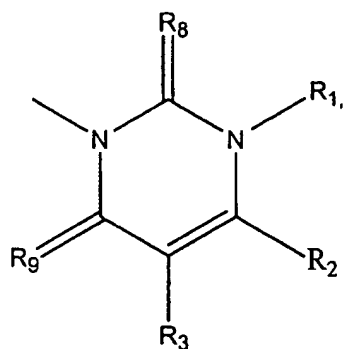
wherein X is hydrogen, halogen, nitro, amino, NHR, N(R)₂, amide, [thioatnide]thioamide, cyano, alkylcarbonyl, alkoxy carbonyl, alkylsulfonamide, unsubstituted or substituted alkyl, haloalkyl, alkoxy, haloalkoxy, alkoxy carbonylalkoxy, benzyloxy, amyloxy, or heteroaryloxy;

Y is hydrogen, halogen, or nitro;

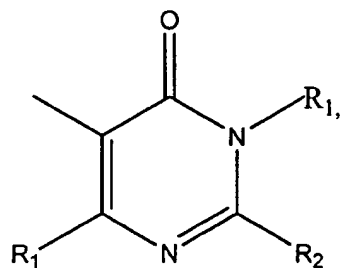
W is hydrogen, OR, SR, NHR, N(R)₂, CH₂R, CH(R)₂, C(R)₃, halogen, nitro, or cyano, where multiple R groups represent any possible combination of substituents described by R; R is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, alkoxy, cycloalkyloxy, aryloxy, heteroaryloxy, alkylsulfonyl, benzyl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxy carbonyl, aryloxy carbonyl, or heteroaryloxy carbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups

represented by one or more of the following: halogen, cyano, nitro, amino, carboxyl, alkyl, haloalkyl, alkylsilyl, alkylcarbonyl, haloalkylcarbonyl, alkoxy, [alkoxybarbonyl]alkoxycarbonyl, haloalkoxy, haloalkoxycarbonyl, alkylsulfonyl, haloalkylsulfonyl, aryl, heteroaryl, or cycloalkyl;

Q is a heterocycle:

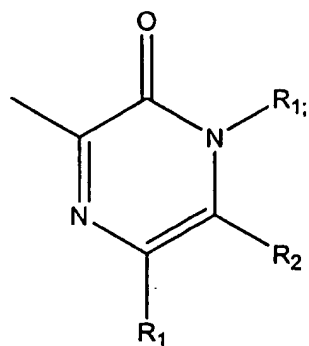


Q1



Q12

or



Q13

wherein R₁ is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, amino, alkoxyalkyl, acetyl, alkoxycarbonylamino, alkylcarbonylamino, or alkoxycarbonyl;

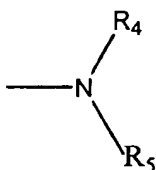
R₂ is alkyl or haloalkyl;

R₁ and R₂ could combine to form a five- or six-membered heterocyclic ring;

R₃ is hydrogen, halogen, nitro, amino, alkylamino, haloalkylamino, cyano, or amide;

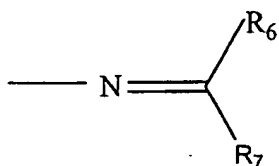
R₈ and R₉ are independently oxygen, or sulfur;

Z is amino, hydroxyl, thiol, formyl, carboxyl, cyano, alkylcarbonyl, arylcarbonyl, azido, or one of the following:



wherein R₄ is alkyl, alkenyl, alkynyl, amino, cycloalkyl, heterocycloalkyl, alkylsulfonyl, arylsulfonyl, benzyl, aryl, heteroaryl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkylthiocarbonyl, cycloalkyloxycarbonyl, aryloxycarbonyl, [arylthio-carbonyl,] aryl-thiocarbonyl, heteroaryloxycarbonyl, aminocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, alkoxycarbonylcarbonyl or arylcarbonylcarbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, dialkylamino, hydroxyl, carboxyl, alkyl, alkenyl, alkynyl, alkylcarbonyl, alkylcarbonyloxy, alkoxy, alkoxycarbonyl, alkylthio, alkylthiocarbonyl, alkoxythiocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, alkylsulfonyl,

alkenyloxycarbonyl, alkynyloxycarbonyl, aryl, arylcarbonyl, aryloxy, aryloxycarbonyl, arylthio, heteroaryl, heteroaryloxycarbonyl or methylenedioxy, wherein the alkyl moiety or aryl moiety may be substituted with halogen, cyano, nitro, alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxycarbonyl, aryl, or heterocycloalkyl; and R_5 is hydrogen or any one of the groups represented by R_4 ; or R_4 and R_5 could combine to form a 4-8 membered heterocyclic ring;



wherein R_6 represents alkyl, haloalkyl, dialkylamino, unsubstituted or substituted aryl and heteroaryl; and R_7 represents hydrogen, halogen or any of the groups represented by R_6 ;

$-OR_4$,

$-SR_4$,

$-CH_2R_{10}$,

$-CH(R_{10})_2$,

$-C(R_{10})_3$, or

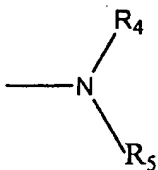
$-CH=CHR_{10}$

wherein R_{10} is carboxyl, alkyl, alkenyl, alkynyl, amino, cycloalkyl, heterocycloalkyl, alkylsulfonyl, arylsulfonyl, benzyl, aryl, heteroaryl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkylthiocarbonyl, cycloalkyloxycarbonyl, aryloxycarbonyl, arylthio-carbonyl, aryl-thiocarbonyl,

heteroaryloxy carbonyl, aminocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, alkoxycarbonyl carbonyl or arylcarbonyl carbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, dialkylamino, hydroxyl, carboxyl, alkyl, alkenyl, alkynyl, cycloalkyl, alkylcarbonyl, alkylcarbonyloxy, alkoxy, alkoxycarbonyl, alkylthio, alkylthiocarbonyl, alkoxythiocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, alkylsulfonyl, alkenyloxy carbonyl, alkynyloxy carbonyl, aryl, arylcarbonyl, aryloxy, aryloxy carbonyl, arylthio, heteroaryl, heteroaryloxy carbonyl or methylenedioxy, wherein the alkyl moiety or aryl moiety may be substituted with halogen, cyano, nitro, alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxycarbonyl, cycloalkyl, aryl, or heterocycloalkyl;

provided that [(1)] Z is not alkyl, alkoxy, haloalkyl, haloalkoxy, alkylthio, haloalkylthio, alkenyl, haloalkenyl, amino, monoalkylamino, dialkylamino, alkoxyalkoxy, hydroxyl, alkynyloxy or cyano, when Q is Q1 and R₂ is haloalkyl.

2. (original): The compound according to claim 1 wherein Z is represented by the following:



wherein R₄ and R₅ are the same as defined in claim 1;

or $\text{---CH}_2\text{R}_{10}$,

wherein R₁₀ is the same as defined in claim 1.

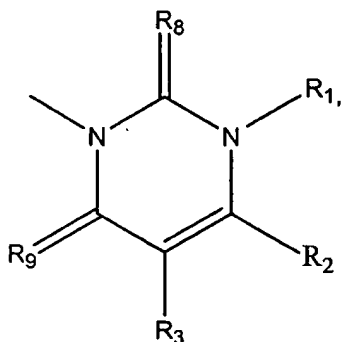
3. (original): The compound according to claims 1 or 2 wherein X is halogen or cyano;

Y is halogen;

W is OR;

R is alkyl, alkenyl, or alkynyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, or carboxyl.

4. (original): The compound according to claim 1 wherein Q is



Q1

wherein R₁ is alkyl, amino, or haloalkyl;

R₂ is haloalkyl;

R₃ is hydrogen;

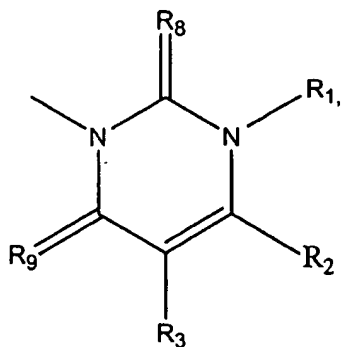
R₈ and R₉ are independently oxygen, or sulfur.

5. (currently amended): The compound according to claim 1 wherein X is a halogen;

Y is fluorine;

W is OR; R is alkyl, alkenyl, or alkynyl, where any of these groups may be unsubstituted or substituted with halogen or cyano;

Q is



Q1

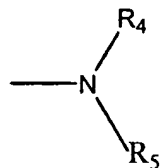
wherein R₁ is alkyl, amino, or haloalkyl;

R₂ is haloalkyl;

R₃ is hydrogen;

R₈ and R₉ are independently oxygen, or sulfur;

Z is represented by the following:



wherein R₄ is alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkylthiocarbonyl, cycloalkyloxycarbonyl, aryloxycarbonyl, [arylthio-carbonyl,] aryl-thiocarbonyl, heteroaryloxycarbonyl, aminocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, alkoxycarbonylcarbonyl, or arylcarbonylcarbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, dialkylamino, hydroxyl, carboxyl, alkyl, alkenyl, alkynyl, alkylcarbonyl, alkylcarbonyloxy,

alkoxy, alkoxycarbonyl, alkylthio, alkylthiocarbonyl, alkoxythiocarbonyl alkylaminocarbonyl, arylaminocarbonyl, alkylsulfonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, aryl, arylcarbonyl, aryloxy, aryloxycarbonyl, arylthio, heteroaryl, heteroaryloxycarbonyl, or methylenedioxy, wherein the alkyl moiety or aryl moiety may be substituted with halogen, cyano, nitro, alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxycarbonyl, aryl, or [heterocyclcoalkyl]heterocycloalkyl; and R₅ is hydrogen;

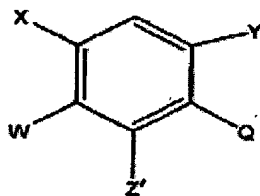
or -CH₂R₁₀,

wherein R₁₀ is carboxyl, alkyl, alkenyl, or alkynyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, dialkylamino, hydroxyl, carboxyl, alkyl, alkenyl, alkynyl, cycloalkyl, alkylcarbonyl, alkylcarbonyloxy, alkoxy, alkoxycarbonyl, alkylthio, alkylthiocarbonyl, alkoxythiocarbonyl alkylaminocarbonyl, arylaminocarbonyl, alkylsulfonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, aryl, arylcarbonyl, aryloxy, aryloxycarbonyl, arylthio, heteroaryl, heteroaryloxycarbonyl, or methylenedioxy, wherein [teh]the alkyl moiety or aryl moiety may be substituted with halogen, cyano, nitro, alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxycarbonyl, cycloalkyl, aryl, or heterocycloalkyl.

6. (currently amended): A compound selected from the group consisting of 3-(2-amino-4-chloro-6-fluoro-3-methoxyphenyl)-1-methyl-6-trifluoromethyl-2,4(1H,3H)pyrimidinedione; [and 3-(²-amino-4-chloro-6-fluoro-3-methoxyphenyl)-1-amino-6-trifluoromethyl-2,4(1H,3H)-pyrimidinedione] 3-(2-amino-4-chloro-3-methoxyphenyl)-1-amino-6-trifluoromethyl-2,4(1H,3H)-pyrimidinedione; 3-(2-amino-4-chloro-6-fluro-3methylphenyl)-1-methyl-6-trifluoromethyl-2,4(1H,3H)-pyrimidinedione; and 3-(2-amino-4-chloro-3-difluoromethoxy-6-fluorophenyl)-1methyl-6-trifluoromethyl-2,4(1H,3H)-pyrimidinedione.

7. (currently amended): A herbicidal composition, characterized in that it contains at least one compound according to claim 1 or 6 and an agricultural adjuvant.

8. (currently amended): A process for preparing a compound represented by the formula I-1 or its salts:



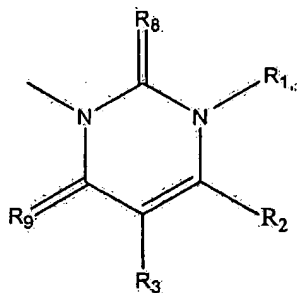
I-1

wherein X is hydrogen, halogen, nitro, amino, NHR, N(R)₂, [ainide]amide, thioamide, cyano, alkylcarbonyl, alkoxycarbonyl, alkylsulfonamide, unsubstituted or substituted alkyl, haloalkyl, alkoxy, haloalkoxy, alkoxycarbonylalkoxy, [benzloxy]benzyloxy, aryloxy, or heteroaryloxy;

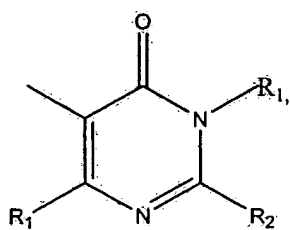
Y is hydrogen, halogen, or nitro;

W is hydrogen, OR, SR, NHR, N(R)₂, CH₂R, CH(R)₂, C(R)₃, halogen, nitro, or cyano, where multiple R groups represent any possible combination of substituents described by R; R is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, alkoxy, cycloalkyloxy, aryloxy, heteroaryloxy, alkylsulfonyl, benzyl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, aryloxy carbonyl, or heteroaryloxy carbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, carboxyl, alkyl, haloalkyl, alkylsilyl, alkylcarbonyl, haloalkylcarbonyl, alkoxy, alkoxycarbonyl, haloalkoxy, haloalkoxycarbonyl, alkylsulfonyl, haloalkylsulfonyl, aryl, heteroaryl, or cycloalkyl;

Q is a heterocycle:

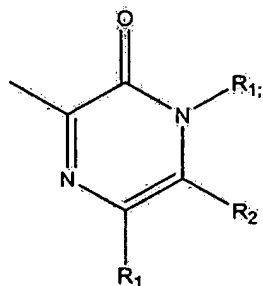


Q1



Q12

or



Q13

wherein R₁ is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, amino, alkoxyalkyl, acetyl, alkoxy-carbonylamino, alkylcarbonylamino, or alkoxy-carbonyl;

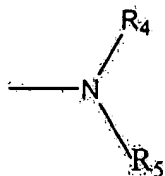
R₂ is alkyl or haloalkyl;

R₁ and R₂ could combine to form a five- or six-membered heterocyclic ring;

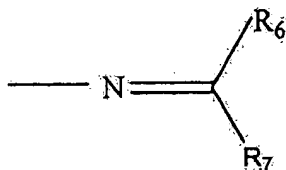
R₃ is hydrogen, halogen, nitro, amino, alkylamino, haloalkylamino, cyano, or amide;

R₈ and R₉ are independently oxygen, or sulfur;

Z^{*} is one of the following:



wherein R₄ is alkyl, alkenyl, alkynyl, amino, cycloalkyl, heterocycloalkyl, alkylsulfonyl, arylsulfonyl, benzyl, aryl, heteroaryl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxy carbonyl, alkylthiocarbonyl, cycloalkyloxy carbonyl, aryloxy carbonyl, [arylthio-carbonyl,] aryl-thiocarbonyl, heteroaryloxy carbonyl, aminocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, alkoxy carbonyl carbonyl, or arylcarbonyl carbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, dialkylamino, hydroxyl, carboxyl, alkyl, alkenyl, alkynyl, alkylcarbonyl, alkylcarbonyloxy, alkoxy, alkoxy carbonyl, alkylthio, alkylthiocarbonyl, alkoxythiocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, alkylsulfonyl, alkenyloxy carbonyl, alkynyloxy carbonyl, aryl, arylcarbonyl, aryloxy, aryloxy carbonyl, arylthio, heteroaryl, heteroaryloxy carbonyl, or methylenedioxy, wherein the alkyl moiety or aryl moiety may be substituted with halogen, cyano, nitro, alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxy carbonyl, aryl, or heterocycloalkyl; and R₅ is hydrogen or any one of the groups represented by R₄; or R₄ and R₅ could combine to form a 4-8 membered heterocyclic ring;



wherein R_6 represents alkyl, haloalkyl, dialkylamino, unsubstituted or substituted aryl and heteroaryl; and R_7 represents hydrogen, halogen or any of the groups represented by R_6 ;

$\text{---CH}_2\text{R}_{10}$,

$\text{---CH}(\text{R}_{10})_2$,

$\text{---C}(\text{R}_{10})_3$, or

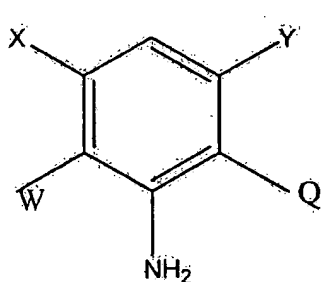
---CH=CHR_{10} .

wherein R_{10} is carboxyl, alkyl, alkenyl, alkynyl, amino, cycloalkyl, heterocycloalkyl, [25] alkylsulfonyl, arylsulfonyl, benzyl, aryl, heteroaryl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkylthiocarbonyl, cycloalkyloxycarbonyl, aryloxycarbonyl, [arylthio-carbonyl] arylthiocarbonyl, heteroaryloxycarbonyl, aminocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, alkoxycarbonylcarbonyl or arylcarbonylcarbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, dialkylamino, hydroxyl, carboxyl, alkyl, alkenyl, alkynyl, cycloalkyl, alkylcarbonyl, alkylcarbonyloxy, alkoxy, alkoxycarbonyl, alkylthio, alkylthiocarbonyl, alkoxythiocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, alkylsulfonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, aryl, arylcarbonyl, aryloxy, aryloxycarbonyl, arylthio,

heteroaryl, heteroaryloxy, carbonyl or methylenedioxy, wherein the alkyl moiety or aryl moiety may be substituted with halogen, cyano, nitro, alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxycarbonyl, cycloalkyl, aryl, or heterocycloalkyl;

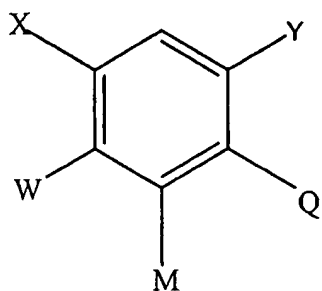
provided that [(1)] Z' is not alkyl, haloalkyl, alkenyl, haloalkenyl, monoalkylamino, or dialkylamino, when Q is Q1 and R₂ is haloalkyl,

which comprises of reacting a compound represented by the formula II:



with a compound selected from the group consisting of an alkyl halide, alkyl acid halide, aryl acid halide, alkyl acid anhydride, aryl acid anhydride, alkylhaloformate, alkyl isocyanate, aryl isocyanate, alkyl dihalide, aliphatic aldehyde, aliphatic ketone, aromatic aldehyde, and aromatic ketone.

9. (currently amended): A compound represented by the formula III:



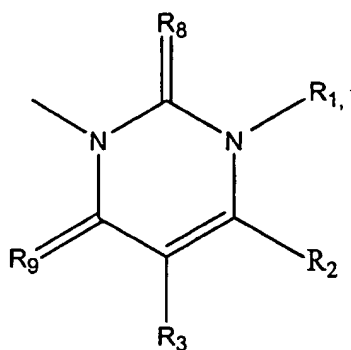
III

wherein X is hydrogen, halogen, nitro, amino, NHR, N(R)₂, amide, thioamide, cyano, alkylcarbonyl, alkoxycarbonyl, alkylsulfonamide, unsubstituted or substituted alkyl, haloalkyl, alkoxy, haloalkoxy, alkoxycarbonylalkoxy, benzyloxy, aryloxy, or heteroaryloxy;

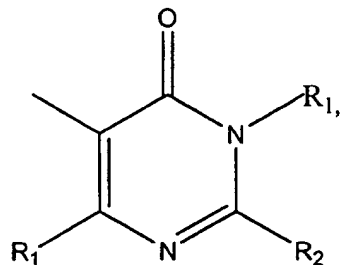
Y is hydrogen, halogen, or nitro;

W is hydrogen, OR, SR, NHR, N(R)₂, CH₂R, CH(R)₂, C(R)₃, halogen, nitro, or cyano, where multiple R groups represent any possible combination of substituents described by R; R is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, alkoxy, cycloalkyloxy, aryloxy, heteroaryloxy, alkylsulfonyl, benzyl, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, aryloxy carbonyl, or heteroaryloxy carbonyl, where any of these groups may be unsubstituted or substituted with any of the functional groups represented by one or more of the following: halogen, cyano, nitro, amino, carboxyl, alkyl, haloalkyl, alkylsilyl, alkylcarbonyl, haloalkylcarbonyl, alkoxy, alkoxycarbonyl, haloalkoxy, haloalkoxycarbonyl, alkylsulfonyl, haloalkylsulfonyl, aryl, heteroaryl, or cycloalkyl;

Q is a heterocycle:

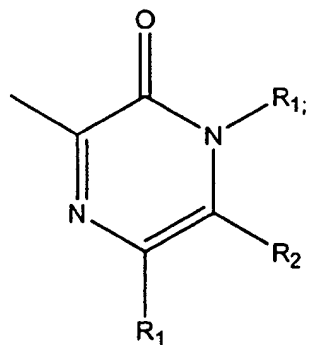


Q1



Q12

or



Q13

wherein R_1 is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, amino, alkoxyalkyl, acetyl, alkoxycarbonylamino, alkylcarbonylamino, or alkoxycarbonyl;

R_2 is alkyl or haloalkyl;

R_1 and R_2 could combine to form a five- or six-membered heterocyclic ring;

R_3 is hydrogen, halogen, nitro, amino, alkylamino, haloalkylamino, cyano, or amide;

R₈ and R₉ are independently oxygen or sulfur;

M is nitro,

provided that 1-methyl-6-trifluoromethyl-3-(4-bromo-2-fluoro-5-hydroxy-6-nitrophenyl)-2,4(1H,3H)-pyrimidinedione and 1-methyl-6-trifluoromethyl-3-(4-chloro-2-fluoro-5-hydroxy-6-nitrophenyl)-2,4(1H,3H)-pyrimidinedione are excluded.

10. (previously presented): A method for controlling undesired vegetation which comprises applying to a locus to be protected a herbicidally effective amount of a compound of claim 1 or 6.

11. (original): The method of claim 10 wherein the locus to be protected is a cereal crop field.

12. (currently amended): The method of claim 11 wherein the compound [of claim 1] is applied to soil as a preemergent herbicide.

13. (currently amended): The method of claim 11 wherein the compound [of claim 1] is applied to plant foliage.

14. (previously presented): A method to defoliate potato and cotton using a compound of claim 1 or 6.